CLAIMS

What is claimed is:

1. A wireless communication system, comprising:

a sender having a timer that produces a timing reference;

a time signal generator that sends the timing reference to a receiver; and

a ranging offset determiner that computes a delay associated with transmitting between the sender and the receiver, the receiver having a timer that is synchronized to the timer of the sender based, at least in part, on at least one of, the timing reference, the delay, and the timer of the receiver.

2. The system of claim 1, where the timing reference is a 32 bit global timing reference.

3. The system of claim 1, comprising:

an acknowledgement relationship establisher that establishes a relationship between the time reference and an expected receive time for an outgoing packet; and

an acknowledgement resolver that determines whether an acknowledgement received corresponds to the outgoing packet utilizing the expected receive time.

4. The system of claim 3, comprising:

a retry determiner that determines whether the outgoing packet should be retransmitted based, at least in part, on the determination made by the acknowledgement resolver.

5. The system of claim 3, comprising:

an acknowledgement requester that determines whether an acknowledgement should be requested based, at least in part, on the determination made by the acknowledgement resolver.

6. The system of claim 1, the sender being a wireless access termination modem system and the receiver being a wireless modem.

7. The system of claim 1, the sender being a wireless modem and the receiver being a wireless access termination modem system, the wireless modem adjusting the expected receive time based on the delay.

8. A system for transmitting packets, comprising:

a timer that produces a timing reference;

a packet building component that builds a packet and transmits the packet to a receiver, the system stores a receive time relative to the timing reference, the receive time being indicative of a time that the packet is expected to be received by the receiver; and

an acknowledgement resolving component that extracts an acknowledgement time from an acknowledgement and determines if the acknowledgement time corresponds to the receive time of the packet.

9. The system of claim 8, further comprising a retry determining component that determines whether the packet should be retransmitted based, at least in part, on the determination made by the acknowledgement resolving component.

10. The system of claim 8, further comprising a time signal generator that sends the timing reference to the receiver to establish time synchronization between the timer and a timer at the receiver.

11. The system of claim 10, further comprising a ranging offset determiner that computes a delay associated with transmitting between the system and the receiver, the delay being utilized to establish time synchronization between the system and the receiver.

12. The system of claim 8, the packet transmission system being one of a wireless access termination modem system and a wireless modem and the external component

being the other of the wireless access termination modem system and the wireless modem, the wireless modem compensating for the computed transmission delay when computing the receive time.

13. A packet receiving system, comprising:

a timer operable to be set to a time related to a timing reference received from a time sender, the timer further operable to keep time synchronously with a timer associated with the time sender; and

an acknowledgement generator that generates an acknowledgement for a packet received from the time sender, where the acknowledgement includes a time value retrieved from the timer, where the time value is the time when the acknowledgement was generated.

14. The system of claim 13, further comprising a ranging offset determiner that computes a transmission delay between the sender and the system, the system utilizing the computed transmission delay to establish time synchronization between the timer and a timer at the sender.

15. A method for controlling packet flow, comprising:

establishing a base time;

computing a ranging offset between a sender and a receiver;

communicating at least one of the base time and the ranging offset to the receiver; and

synchronizing timers of at least one of the sender and the receiver based on the at least one of the base time and the ranging offset.

16. The method of claim 15, further comprising:

transmitting a packet to the receiver;

storing a time that the packet is expected to be received at the receiver; and

determining whether an acknowledgement contains a time value corresponding to the expected receive time, such that the acknowledgement corresponds to the packet.

17. The method of claim 16, further comprising selectively retransmitting the packet based, at least in part, on the determination of whether an acknowledgement to the packet is received.

18. The method of claim 16, comprising selectively requesting an acknowledgement to the packet based, at least in part, on the determination of whether an acknowledgement to the packet is received.

19. A method for controlling packet flow, comprising:

transmitting a packet from a sender to a receiver;

storing a time value indicative of an expected time that the packet is to be received by the receiver;

extracting an acknowledgement time from an acknowledgement from the receiver; and

determining if the acknowledgement received corresponds to the packet utilizing the expected time and the acknowledgement time.

20. The method of claim 19, further comprising establishing synchronization between a time of the sender and a timer of the receiver prior to transmitting the packet.

21. The method of claim 19, the establishing synchronization comprising transmitting a base time and a ranging offset to the receiver and adjusting the timer of the receiver to the time of the sender by utilizing the base time and the ranging offset.

22. The method of claim 19, the acknowledgement time being the time when the receiver generates the acknowledgment.

23. The method of claim 19, further comprising:

sending a packet to the sender from the receiver;

storing a time value indicative of an expected time that the packet is to be received by the sender by compensating for a ranging offset associated with a transmission delay between the receiver and sender;

extracting an acknowledgement time from an acknowledgement from the sender; and

determining if an acknowledgement received from the sender corresponds to the packet sent by the receiver utilizing the expected time that the packet is to be received by the sender and the acknowledgement time extracted from an acknowledgement from the sender.

24. A system for controlling packet flow, comprising:

means for synchronizing time between a sender and a receiver;

means for transmitting a packet between the sender and receiver;

means for recording a time at which the packet is expected to be received;

means for receiving a time-stamped acknowledgement to the transmitted packet; and

means for determining whether an acknowledgement corresponds to a transmitted packet utilizing a time stamp in the time-stamped acknowledgement and the time at which the packet is expected to be received.

25. A global acknowledgment frame for transmitting between a sender and a receiver, the frame comprising:

a first portion that holds a plurality of acknowledgements corresponding to a plurality of packets received at the receiver; and

a second portion that holds an acknowledgement time when the acknowledgement was generated at the receiver.

26. The frame of claim 25, the sender being a wireless access termination modem system and the receiver being a wireless modem, the acknowledgement time being derived from a base time established in the wireless access termination modem.

27. The frame of claim 25, the receiver being a wireless access termination modem system and the sender being a wireless modem, the acknowledgement time being derived from a base time established in the wireless access termination modem and a transmission delay between the sender and receiver.

28. A system for controlling packet flow, comprising:

at least one packet receiver that receives packets from a sending component;

at least one acknowledger that generates a plurality of acknowledgements corresponding to the received packets;

an acknowledgement aggregator that packages the plurality of acknowledgements and a single time stamp into an acknowledgement frame; and

an acknowledgement frame transmitter that sends the acknowledgement frame to the sending component.

29. The system of claim 28, the sender being a wireless access termination modem system and the receiver being a wireless modem, the acknowledgement time being derived from a base time established in the wireless access termination modem.

30. The system of claim 28, the single time stamp corresponding to a time that the acknowledgement frame was generated.

31. The system of claim 28, the receiver being a wireless access termination modem system and the sender being a wireless modem, the acknowledgement time being derived from a base time established in the wireless access termination modem and a transmission delay between the sender and receiver.

32. The system of claim 28, the acknowledgement frame being transmitted across a plurality of messages.

33. A method for controlling packet flow, comprising:

receiving at plurality of packets from a sending component;

producing acknowledgements corresponding to the plurality of received packets;

aggregating the acknowledgements into an acknowledgement frame; and

transmitting the acknowledgement frame to the sending component.

34. The method of claim 33, further comprising providing the acknowledgement frame with a single time stamp.

35. The method of claim 34, the single time stamp corresponding to a time that the acknowledgement frame was generated.

36. The method of claim 35, further comprising deriving the timestamp from a base time established in a wireless access termination modem.

37. The method of claim 33, the transmitting the acknowledgement frame to the sending component comprising transmitting the acknowledgement frame across one of a plurality of message headers and a single MAC management message.

38. A system for controlling packet flow, comprising:

means for receiving a plurality packets from a sending component;

means for producing acknowledgements to the plurality of packets;

means for aggregating the acknowledgements into an acknowledgement frame;

means for providing a single timestamp in the acknowledgment frame;

and

means for transmitting the acknowledgement frame to the sending component.

39. An acknowledgement frame for transmitting data between a wireless access termination modem and a wireless modem, comprising:

a first portion that holds a plurality of packet acknowledgements; and

a second portion that holds a packet identifier that identifies a packet as an acknowledgement frame.

40. The frame of claim 39 further comprising a single time stamp corresponding to a time that the acknowledgement frame was generated.